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# The Meconematinae (Orthoptera, Tettigoniidae) of Northern Honshu, Japan, with Descriptions of New Taxa

By

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The meconematine tettigonids have little been known from the Tōhoku District, north-eastern Honshu, Japan, with the only exception of one species. This is *Nipponomeconema mutsuense* recently described by myself (YAMASAKI, 1983).

The survey of western half of this district excluding Aomori Prefecture held in 1982 under the project of the National Science Museum, Tokyo, made clear that two more meconematines were added to the fauna of the district. One is *Tettigoniopsis forcipicercus* YAMASAKI hitherto known from central Honshu and the other is a new species belonging to a new genus.

The new species was collected on Mt. Funagata-yama in the Ōu Mountain Range, but the material obtained consisted only of two males. For erecting a new genus, I prefer to designate another congeneric new species from central Honshu as the type-species because I have at my hand both the sexes of the meconematine. In the present paper, therefore, I will describe the new species from Mt. Funagata-yama after the description of this type-species. All the type-specimens herein designated are preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo. This is the fourth report dealing with the Japanese Meconematinae.

Before going further, I wish to express my hearty thanks to Mr. T. WATANABE, Sendai, and to Dr. H. KURAHASHI, National Institute of Health, Tokyo, for their kind aid in carrying by participating in the above-mentioned survey. I also wish to express my sincere gratitude to Dr. S.-I. UÉNO for kindly reading the original manuscript and giving valuable advice.

## *Tettigoniopsis forcipicercus* YAMASAKI, 1982

*Tettigoniopsis forcipicercus* YAMASAKI, 1982, Bull. natn. Sci. Mus., Tokyo, (A), 8, pp. 127–129, figs. 24–33.

*Specimens examined.* 1♀, Toroko-onsen nr. Hachimantai, Akita, 16. x. 1982 (M. TOMOKUNI); 1♀, Yunotai, 200 m, Moriyoshi, Akita, 11. x. 1982 (M. OWADA); 3♂ 3♀, eastern

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slope of Mt. Funagata-yama, 900 m, Masuzawa, Taiwa-chô, Kurokawa-gun, Miyagi, 8. ix. 1982 (T. YAMASAKI); 1♀, Hirashimizu, northwestern slope of Mt. Gassan, 920 m, Yamagata, 10. ix. 1982 (T. YAMASAKI); 1♀, Daikura-oné nr. Iide-sansô, Nishi-okitama-gun, Yamagata, 11. x. 1982 (M. TOMOKUNI).

*Notes.* This species seems to be widely distributed in the Tôhoku District in view of the above data. A female specimen from Yunotai, Moriyoshi, Akita Prefecture, is slightly different from those of the other local specimens in more recurved ovipositor. However, the difference is not decisive because of the presence of some variation in the shape of ovipositor in the Funagata-yama population.

Genus *Cosmetura* YAMASAKI, nov.

(κοσμητός, adorned; οὐρά, cauda. Gender feminine.)

*Type-species.* *Cosmetura ficifolia* YAMASAKI, sp. nov.

Meconematinae. Small-sized. Brachypterous in both sexes.

Fastigial cone of head with a weak sulcus. Pronotum rather long, shiny, poorly with an arcuate sulcus in distal fourth of prozona, and without humeral suture; metazona roundly convex in male and normally level in female. Lateral foramina of thorax (thoracic auditory spiracles) small, but visible in latero-caudal or ventro-caudal view. Male fore wings sometimes reaching the posterior margin of the second abdominal tergite and showing typical degenerated venation, and almost all female fore wings concealed under pronotum. Tibial auditory structure long elliptical.

Male supra-anal plate remarkably modified; base forming a pair of triangular horizontal plate directed outside, dorsal surface variable to some extent, ventral side with a projection in medio-subbasal portion and with a pair of round and latero-ventrally protruding lobes just behind this projection, posterior half becoming wider. Male cerci gently incurved, dorso-basally with triangular inner plate. Male subgenital plate transverse, rapidly recurved at apical third. Ovipositor short, recurved just before middle, sharp at the apical part, and without hook at the apex. Female subgenital plate covering only the ventral base of ovipositor.

*Range.* Known so far only from Honshu and the Island of Tsushima (FUJIMOTO and KANÔ, 1980), Japan.

*Notes.* This genus is remarkable in modified supra-anal plate of the male and short, recurved and sharp ovipositor in the female. '*Cosmetura*' is derived from the former character. It is difficult to determine at present its true affinity in the Meconematinae.

*Cosmetura ficifolia* YAMASAKI, sp. nov.

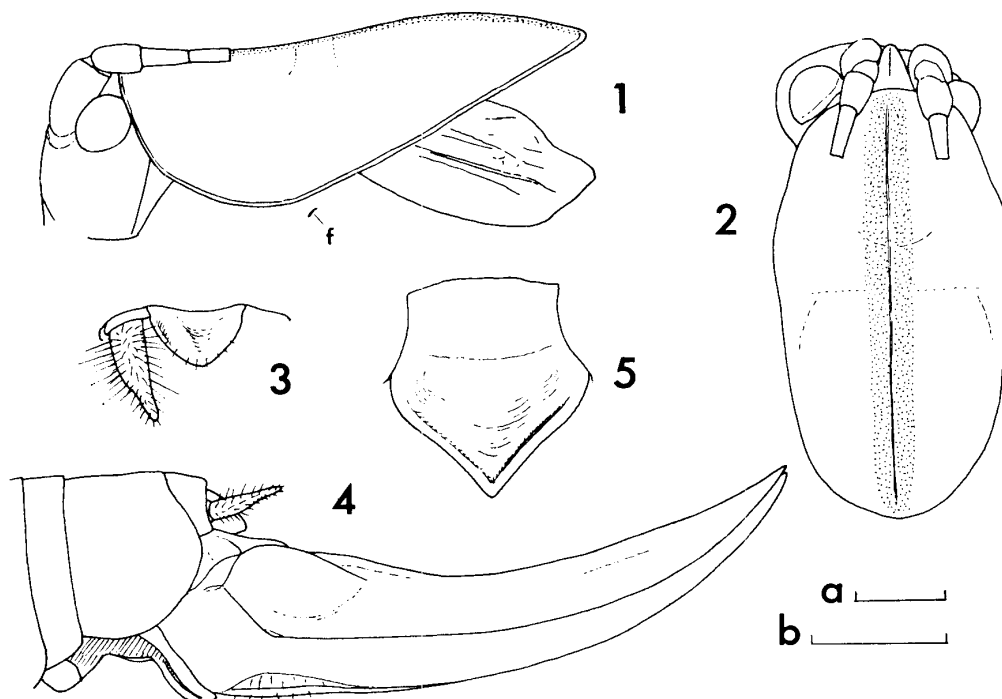
(Figs. 1-8)

Grass-green, with a chestnut brown or brownish mesal band on the dorsal surface of the body. Male supra-anal plate dark brown or brown, modified as shown in Figs. 6-8.

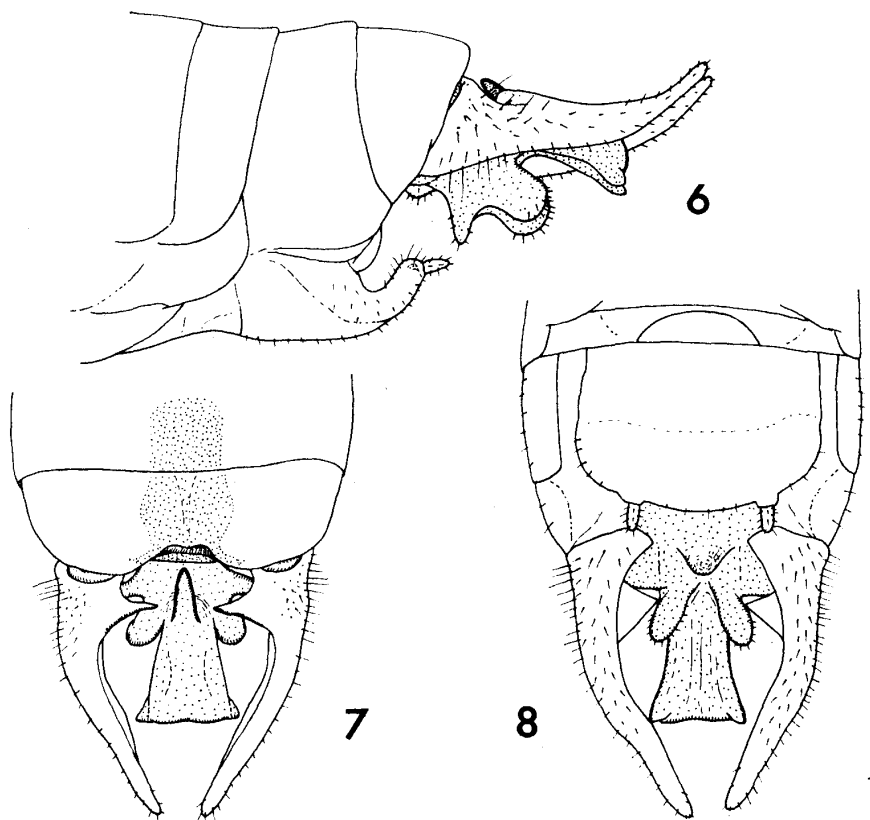
Ovipositor recurved as shown in Fig. 4, with its basal part strongly expanded.

*Male.* Head as shown in Fig. 1; fastigial cone moderately protruded. Eyes subglobular, relatively small. Pronotum rather long, roundly convex in metazona as shown in Figs. 1 and 2; anterior margin weakly round and posterior margin round but protruding more posteriorly in median part. Lateral foramina of thorax (thoracic auditory spiracles) (f in Fig. 1) small, narrowly rimose, and visible in ventro-caudal view. Fore wings round quadrangular; apex reaching the posterior margin or the subposterior area of the second tergite. Fore and middle legs with unarmed femora; tibiae with three or four spines on both the ventral margins, each bearing a small spine at both sides of apex; auditory structure of fore tibiae long elliptical. Hind legs with unarmed femora; tibiae with 26 to 33 teeth on both the dorsal margins and with a pair of spines at subapical ventral portion, and apex with four spurs. Tubercles of meso- and metathoracic basisternites weak.

Abdominal end as shown in Figs. 6–8. The ninth abdominal tergite elongate ventro-laterally, forming anal angle at the ventral posterior end. Tenth abdominal tergite depressed postero-medially. Supra-anal plate (Figs. 6–8) deformed, protruded posteriorly between both the cerci, with a pair of triangular plates at latero-basal sides, a medial round protuberance directed ventrally between these plates, a mesal corniform protuberance directed anteriorly at basal third on dorsal surface, and a pair of round lobes directed ventro-laterally just behind the triangular plates on the ventral sides; apical half becoming wider, round dorsally, its venter lining the dorsum, with angular wings at both the apical sides: posterior margin



Figs. 1–5. *Cosmetura ficifolia* YAMASAKI, gen. et sp. nov. — 1 and 2. Male head, pronotum and fore wing, lateral (1) and dorsal (2) views. f: lateral foramen of thorax. — 3. Female cercus and supra-anal plate, dorsal view. — 4. Female abdominal end and ovipositor, lateral view. — 5. Female subgenital plate, ventral view. Scales, 1 mm. Scale a is for Figs. 1, 2 and 4, and scale b for Figs. 3 and 5.



Figs. 6–8. Male abdominal end of *Cosmetura ficifolia* YAMASAKI, gen. et sp. nov. — 6. Lateral view. — 7. Dorsal view. — 8. Ventral view. Scale, 1 mm.

shallowly excised mesad. Cerci (Figs. 6–8) wide at base, gently incurved, becoming narrow apically, with a thin triangular inner protrusion at the dorso-subbasal portion; basal half excavated on the inner face and the apical half cylindrical though tapering towards the apex, which is round. Subgenital plate wide as shown in Fig. 8, rapidly recurved at apical third (Fig. 6); lateral margin round, posterior margin slightly round; styli moderate in size.

*Female.* Pronotum not so convex as in the male. Fore wings oval, mostly concealed under pronotum.

Abdominal end as shown in Fig. 4. Supra-anal plate (Fig. 3) short, semi-circular. Cerci (Figs. 3 and 4) long conical, but these become slenderer in apical third. Ovipositor short as shown in Fig. 4, deep in basal half and strongly inflated in basal part, recurved just before middle, and sharp in apical part. Subgenital plate (Fig. 5) pentagonal; posterior half protruding triangularly and only covering the ventral base of ovipositor.

*Coloration.* Grass-green or greenish, with a brown dorso-mesal band from occiput to the tenth abdominal tergite, of which the pronotal part is sometimes wider than the abdominal. Eyes brown. Antennae brownish. Apices of lower lobes of femora in each leg and dorsal teeth of hind tibia black. Ventral spines of each tibia and ovipositor light brown. Male supra-anal plate dark to light brown.

*Measurements* (mm). Body length from apex of fastigial cone to apex of cercus, ♂ 11.7–15.0 (15.0 in holotype); body length from apex of fastigial cone to apex of ovipositor, ♀ 16.9–

18.8; body length from apex of fastigial cone to base of ovipositor, ♀ 11.4–13.3; head width (extraocular distance), ♂ 2.2–2.3 (2.3), ♀ 2.3–2.5; pronotal length, ♂ 5.2–5.4 (5.4), ♀ 5.0–5.6; fore wing length, ♂ 2.5–3.1 (3.1), ♀ 1.8–2.4; hind femoral length, ♂ 10.4–10.7 (10.7), ♀ 10.7–11.4; hind tibial length, ♂ 10.6–10.9 (10.9), ♀ 10.1–11.6; cercal length, ♂ 2.2–2.3 (2.3); ovipositor length, 6.8–7.1.

*Type-series.* Holotype: ♂, Mt. Ô-yama, Sagami, Kanagawa, 15. viii. 1979 (T. YAMASAKI). Paratypes (including allotype): 1♀ (allotype), Mt. Takao-san, Tokyo, 26. ix. 1978 (T. YAMASAKI); 1♂, Hiwada-yama, Koma-hongô, Hannô, Saitama, 28. viii. 1979 (T. YAMASAKI); 2♀, Shirakawa and Amagi-tôge, Izu, Shizuoka, 28. viii. 1980 (T. YAMASAKI); 1♀, Nesugata-yama, Shimoda, Shizuoka, 28. viii. 1980 (T. YAMASAKI).

*Localities of the type-species.* Hiwada-yama, Hannô, Saitama; Mt. Takao-san, Tokyo; Mt. Ô-yama (type-locality!), Sagami, Kanagawa; Amagi-tôge, Shirakawa and Shimoda, Izu, Shizuoka. All in Honshu, Japan.

*Notes.* The present species is different from all the other brachypterous forms of the Meconematinae in having unique supra-anal plate in the male. A broad brownish mesal band on dorsal surface of the body is also characteristic. This species has a close relationship to the following species.

This species is an inhabitant of broadleaved forest in mountainous areas. FUJIMOTO and KANÔ (1982) reported on the distribution and the ethological observation of this species. According to them, this species is also distributed in the western half of Honshu and in the Island of Tsushima, and a male in courtship taps his hind legs together with stridulating his fore wings, then a female in a nearby place responds also by tapping her hind legs in the same manner.

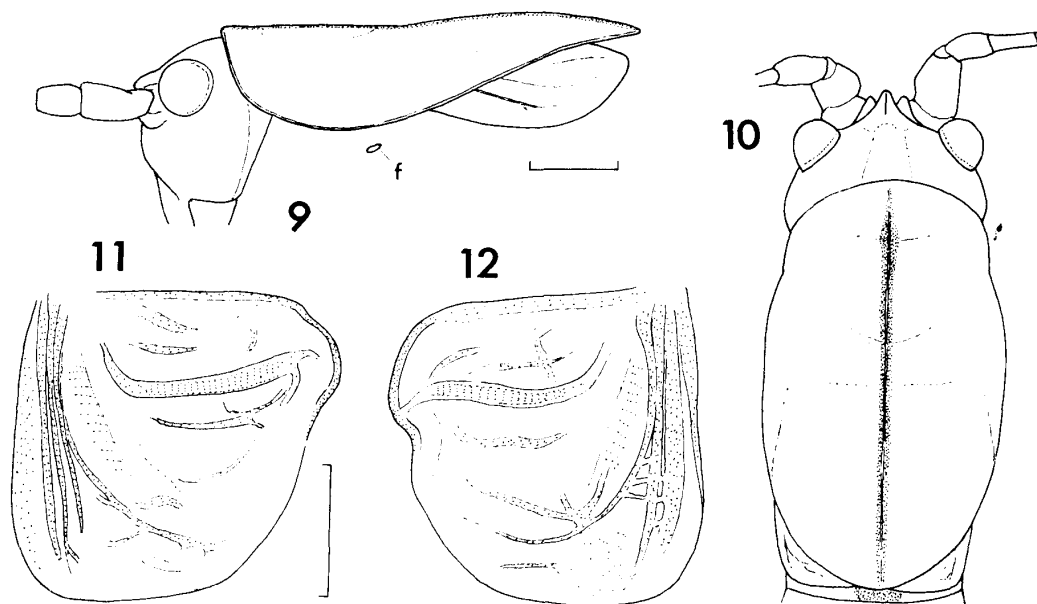
The species name '*ficifolia*' means a 'fig-leaf'.

### *Cosmetura fenestrata* YAMASAKI, sp. nov.

(Figs. 9–15)

Very similar to the type-species of the genus. Grass-green, with a chestnut brown mesal band on the dorsal surface of body. The pronotal band is narrower than the abdominal one. Male supra-anal plate as shown in Figs. 13–15, without dorso-mesal corniform protuberance situated between the triangular latero-basal plates. Hind tibial teeth smaller in number than those of the type-species of the genus.

*Male.* Head and pronotum as shown in Figs. 1 and 2, almost the same as in the preceding species. Lateral foramina of thorax (thoracic auditory spiracles) (f in Fig. 9) small, but a little wider than in the preceding species. Fore wings as shown in Figs. 11 and 12, with degenerated veins; stridulatory vein not so broad as in *Tettigoniopsis forcipicercus*; stridulatory teeth 82 (right fore wing) and 93 (left fore wing) in number in a specimen examined. Fore and middle legs also almost the same as in the preceding species, but the auditory structure of fore tibiae is long and wide elliptical. Hind legs with 18 to 24 teeth on both the dorsal margins of tibiae.



Figs. 9–12. *Cosmetura fenestrata* YAMASAKI, gen. et sp. nov. — 9 and 10. Male head, pronotum and fore wings, lateral (9) and dorsal (10) views. f: lateral foramen of thorax. Scale, 1 mm. — 11 and 12. Male left (11) and right (12) fore wings. Scale, 1 mm.

Abdominal end as shown in Figs. 13–15. The tenth abdominal tergite becoming wider ventro-laterally and roundly protruded ventro-posteriorly. The tenth abdominal tergite depressed between the cerci. Supra-anal plate (Figs. 13–15) similar in shape to that of the type-species, but it is different in the absence of dorso-mesal corniform protuberance on the dorsum in anterior half; this part becoming a concavity and making a pale fenestra; a ventro-medial protuberance at the subbasal portion wide at base, then narrowing, flat at apex, depressed antero-posteriorly; posterior half becoming wider, posterior angles round and posterior margin incised or incurved at the centre. Cerci also similar to those of the type-species, gently incurved at the apical half, with a thin triangular inner protrusion at the dorso-subbasal portion. Subgenital plate (Fig. 15) wide, becoming narrower and curled dorsally in apical third; posterior margin incurved at the inner side of styli, and roundly but weakly protruded between the incurved parts.

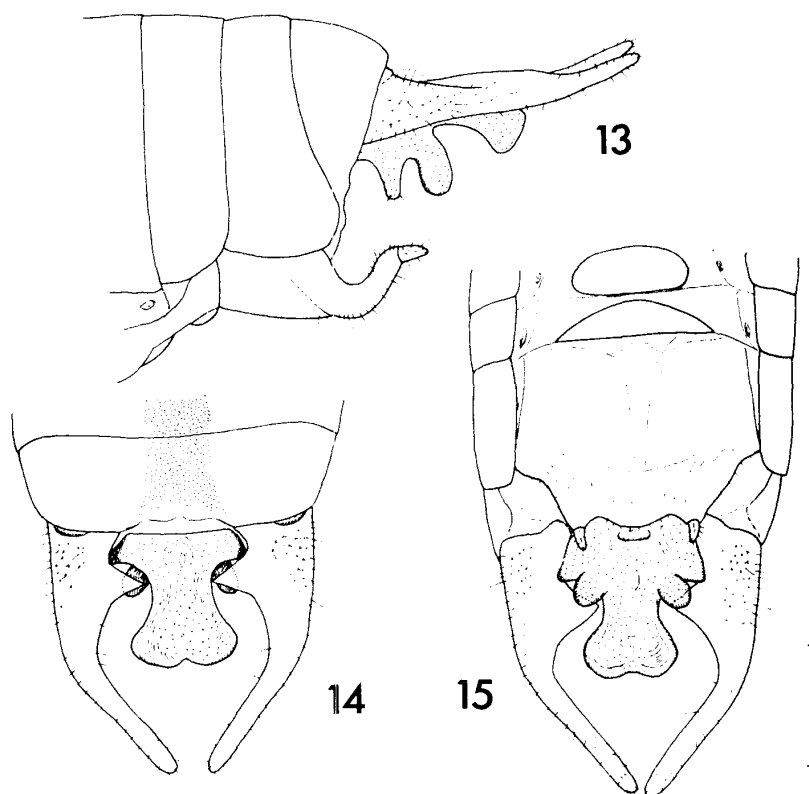
**Coloration.** Almost the same as in the preceding species, but there are some differences. The longitudinal brown band is narrower on occiput and pronotum than on the dorsum of abdomen. Lower genual lobes of each femur black in apical half.

**Measurements** (mm). Body length from apex of fastigial cone to apex of cercus, 12.0–12.8 (12.0 in holotype); head width (extraocular distance), 2.2–2.3 (2.2); pronotal length, 4.7–4.8 (4.7); fore wing length, 2.4–2.8 (2.8); hind femoral length, 8.6–8.7 (8.7); hind tibial length, 9.5 (9.5); cercal length, 2.1–2.2 (2.2).

**Female.** Unknown.

**Type-material.** Holotype: ♂, eastern slope of Mt. Funagata-yama, 900 m, Masuzawa, Taiwa-chô, Kurokawa-gun, Miyagi, 8. ix. 1982 (T. YAMASAKI).

**Other material examined.** 1♂ (in alcohol), same data as the holotype.



Figs. 13–15. Male abdominal end of *Cosmetura fenestrata* YAMASAKI, gen. et sp. nov. — 13. Lateral view. — 14. Dorsal view. — 15. Ventral view. Scale, 1 mm.

*Type-locality.* Mt. Funagata-yama, Ôu Mountain Range, Tôhoku District, Honshu, Japan.

*Notes.* This species is closely related to the preceding species, but is different in the shape of male supra-anal plate and the number of teeth on the dorsal margins of hind tibiae.

This species lives on the leaves of broadleaved trees in the mountainous forest and occurs sympatrically with *Tettigoniopsis forcipicercus* YAMASAKI at the collecting sites on Mt. Funagata-yama, Ôu Mountain Range.

The specific name '*fenestrata*' is derived from the presence of a pale fenestral concavity instead of a dorso-mesal protuberance in the anterior half of male supra-anal plate.

#### *Nipponomeconema mutsuense* YAMASAKI, 1983

*Nipponomeconema mutsuense* YAMASAKI, 1983 Annot. zool. Japon., 56, pp. 62–65, figs. 1, 3, 7, 11, 15, 18, 22 and 26.

*Notes.* This species is included in the present paper for completing the list of the Meconematinae from the Tôhoku District. It has been known only from the type-series obtained from Aomori, Yamagata and Niigata Prefectures.

## 要 約

東北地方のヒメツユムシ類については、ムツツユムシモドキ *Nipponomeconema mutsuense* が唯一の種として知られている (YAMASAKI, 1983). 1982年に行われた日本列島の自然史科学的総合研究による、青森県をのぞく東北地方西半の調査によって、もう2種をつけ加えることができた。このうちの1種は本州中部から知られているヒメヤブキリモドキ *Tettigoniopsis forcipicercus* で、この種は東北地方に広く分布しているらしいことが、この調査で判明した。もう1種は明らかに新属・新種であるが、雌の標本を欠くために、新属創設にあたり、両性の標本のそろっている関東や伊豆地方産の同属の新種をタイプ種として選び、これにもとづき新属 *Cosmetura* を記載し、ついで奥羽山脈船形山産の新種の記載を行った。

*Cosmetura* 属は、ヒメツユムシ亜科の短翅群に属し、雄の肛上板が後方に伸長し、複雑な形状をし、褐色をしていることと、横幅の広い生殖下板の先3分の1が背方に強く反っていることなどにおいて、きわめて特異である。一方、雌の産卵管は背方にゆるく反った短剣状で、先端は鋭くとがっている。この属のタイプ種 *ficifolia* では、雄の肛上板背部の基方中央に頭方に向かう1本の突起をもつが、船形山産の *fenestrata* では、この突起を欠き、しかもこの部分がへこみ、明るくなって、腹側が透けて見えることで識別される。

なお、これらの新属・新種の和名として、*Cosmetura* 属にコバネササキリモドキ属、*C. ficifolia* にはコバネササキリモドキ、*C. fenestrata* にはとりあえずトゲヌキコバネササキリモドキをあてておきたい。

## References

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